IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Eric D. SHAW	**RECEIVED**
Serial No.:	09/767,838	APR 0 2 2004
Filed:	January 24, 2001	Technology Center 2600
For:	SYSTEM AND METHOD FOR COMPUTER ANALYSIS OF COMPUTER GENERATED COMMUNICATIONS TO PRODUCE INDICATIONS AND WARNING OF DANGEROUS BEHAVIOR	
Art Unit:	2644	
Examiner:	To Be Assigned	

INFORMATION DISCLOSURE STATEMENT
PURSUANT TO 37 C.F.R. §1.56

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

April 1, 2004

Sir:

The inventor of this application has learned of work of James Pennebaker and colleagues as analyzed below. The analysis is based on the inventor's interpretation of Pennebaker's work as reported in the literature, use of commercial software embodying Pennebaker's work and a printed publication describing Pennebaker's commercial software which is dated after the filing date of the present application.

Starting in 1986, another academic researcher, James Pennebaker and his colleagues, were involved in studies which examined the therapeutic benefits of writing about personal and emotional issues—especially trauma—on physical and mental health. Pennebaker and his colleagues began by asking students to write

about emotional and traumatic events and comparing these writings to those concerning non-emotional or superficial topics (Pennebaker et. al. 1988; Petrie et. al. 1995; Pennebaker et. al. 1990; Pennebaker and Francis, 1996). Pennebaker and his colleagues also asked prison inmates to write about traumatic and non-traumatic events and compared the impact on infirmary visits, self-reports of anxiety and general symptoms (Richards et. al. 1995). They also asked unemployed men to write about the experience of being laid off or about superficial topics and compared the number of months to re-employment and self-reports of anxiety (Spera et. al. 1994). In 1997, Pennebaker, Mayne and Francis pooled the data from the above studies and analyzed it using a computerized word-counting text analysis software known as the Linguistic Inquiry and Word Count (LIWC) (see Table A below). Using the LIWC to analyze these writings, the authors found that specific changes in the subjects writing were related to such outcome measures as decreased physicians visits, physical symptoms, student grade improvements and finding new jobs. In the same article, Pennebaker, Mayne and Francis (1997) compared interviewed transcripts of 30 men who had lost their partners to AIDS and found correlations between writing styles and post-bereavement distress at one year.

In 1999, Pennebaker and King used the LIWC to examine whether language use could reflect personality style in samples of substance abuse inpatients, daily writing assignments from 35 students and the journal abstracts of 40 social psychologists. The authors compared linguistic styles to several personality measures. They found evidence that language styles were stable among individuals over time and that linguistic style was related to personality characteristics.

In 2000, Erlbaum Publishers, made the LIWC software available to researchers and the general public for $99 based on Pennebaker and Francis' design and instruction (1999).

Table A. LIWC Categories from the 2001 LIWC Manual			
DIMENSION	ABBREV.	EXAMPLES	# WORDS
I. STANDARD LINGUISTIC DIMENSIONS			
Total pronouns	Pronoun	I, our, they, you're	70
1st person singular	I	I, my, me	9
1st person plural	We	we, our, us	11
Total first person	Self	I, we, me	20
Total second person	You	you, you'll	14
Total third person	Other	she, their, them	22
Negations	Negate	no, never, not	31
Assents	Assent	yes, OK, mmhmm	18
Articles	Article	A, an, the	3
Prepositions	Preps	On, to, from	43
Numbers	Number	one, thirty, million	29
II. PSYCHOLOGICAL PROCESSES			
Affective or Emotional Processes	Affect	Happy, ugly, bitter	615
Positive Emotions	Posemo	Happy, pretty, good	261
Positive feelings	Posfeel	happy, joy, love	43
Optimism and energy	Optim	certainty, pride, win	69
Negative Emotions	Negemo	hate, worthless, enemy	345
Anxiety or fear	Anx	nervous, afraid, tense	62
Anger	Anger	hate, kill, pissed	121
Sadness or depression	Sad	grief, cry, sad	72
Cognitive Processes	Cogmech	cause, know, ought	312
Causation	Cause	because, effect, hence	49
Insight	Insight	think, know, consider	116
Discrepancy	Discrep	Should, would, could	32
Inhibition	Inhib	block, constrain	64

Tentative	Tentat	maybe, perhaps, guess	79
Certainty	Certain	always, never	30
Sensory and Perceptual Processes	Senses	see, touch, listen	111
Seeing	See	View, saw, look	31
Hearing	Hear	heard, listen, sound	36
Feeling	Feel	touch, hold, felt	30
Social Processes	Social	Talk, us, friend	314
Communication	Comm	talk, share, converse	124
Other references to people	Othref	1st pl, 2nd, 3rd per prns	54
Friends	Friends	pal, buddy, coworker	28
Family	Family	mom, brother, cousin	43
Humans	Humans	boy, woman, group	43

III. RELATIVITY

Time	Time	hour, day, oclock	113
Past tense verb	Past	walked, were, had	144
Present tense verb	Present	walk, is, be	256
Future tense verb	Future	will, might, shall	14
Space	Space	around, over, up	71
Up	Up	up, above, over	12
Down	Down	down, below, under	7
Inclusive	Incl	with, and, include	16
Exclusive	Excl	but, except, without	19
Motion	Motion	walk, move, go	73

IV. PERSONAL CONCERNS

Occupation	Occup	Work, class, boss	213
School	School	class, student, college	100
Job or work	Job	employ, boss, career	62
Achievement	Achieve	Try, goal, win	60
Leisure activity	Leisure	house, TV, music	102
Home	Home	house, kitchen, lawn	26
Sports	Sports	football, game, play	28
Television and movies	TV	TV, sitcom, cinema	19
Music	Music	tunes, song, cd	31
Money and financial issues	Money	cash, taxes, income	75
Metaphysical issues	Metaph	God, heaven, coffin	85
Religion	Relig	God, church, rabbi	56
Death and dying	Death	dead, burial, coffin	29

Physical states and functions	Physcal	ache, breast, sleep	285
Body states, symptoms	Body	ache, heart, cough	200
Sex and sexuality	Sexual	lust, penis, fuck	49
Eating, drinking, dieting	Eating	eat, swallow, taste	52
Sleeping, dreaming	Sleep	Asleep, bed, dreams	21
Grooming	Groom	Wash, bath, clean	15
APPENDIX: EXPERIMENTAL DIMENSIONS			
Swear words	Swear	damn, fuck, piss	29
Nonfluencies	Nonfl	uh, rr*	6
Fillers	Fillers	youknow, Imean	6

In summary, Pennebaker and his colleagues have designed a system to evaluate linguistic style. The system was originally designed to study the relationship between writing and speaking about trauma in general, as well as the specific forms of expression, and their relation to recovery from traumatic events and illness. They have also used the system for basic psycholinguistic research--to assess the stability of linguistic style in individuals over time and the relationship of linguistic style to personality characteristics. Their research has concentrated on students, psychiatric patients and other traumatized groups. The computerized form of their system was published for the general public in 2000 and is available for use for a fee.

Tables B and C below summarize the similarities and differences between the prior art cited and the invention.

Table B. Overview of Characteristics of Prior Art

Author/ Function	Coding of Text Using Words or phrases with Psychological Meaning	Computerized	Research Subjects	Published As of 2001
Weintraub	Yes	Yes	Psychiatric Patients	Leadership analysis
Gottschalk et. al.	Yes	Yes	Mentally & Physically ill Patients, normals	Changes in emotional states due to illness
Hermann	Yes	No	Foreign & domestic leaders	Leadership analysis
Mehrabian & Wiener	Yes	No	Students	Detection of attitude toward others
Manheim & Albritton	Yes	No	Media coverage	Changes in tone of media coverage
Pennebaker et. al.	Yes	Yes	Trauma sufferers, prisoners, students, authors, unemployed males	Effect of writing, talking on recovery from trauma, stability of psycholinguistic traits over time, relation to personality

The invention overlaps with the prior art at a general level involving the analysis of text for psychological meanings.

Table C. Comparison of Functions/Applications of Prior Art to the Invention

Functions/ authors	Weintraub	Gottschalk Et. al.	Hermann	Mehrabian & Wiener	Manheim & Albritton	Pennebaker Et. al.	Invention
Applied to CMC	No	No	No	No	No	No	Yes
Detects Changes In emotional state	no	Yes	No	No	Yes	no	Yes
Applied to normal employees at work	No	No	No	No	No	No	Yes
Warns of dangerous Psychological States	No	No	No	No	No	No	Yes
Self monitoring	No	No	No	No	No	No	Yes

Relationship management Support	No	No	No	No	No	No	Yes
Detects Tone of media coverage	No	No	No	No	Yes	No	Yes
Aids personnel selection	No	No	No	No	No	No	Yes

As Table C indicates, none of the prior art used a computerized system to examine computer-mediated communications (CMC) to perform analysis of:

- psychological state of employees or normal individuals in the work place,
- to detect changes in psychological state indicative of danger and generate a warning,
- to monitor a user's own portrayed psychological state through his or her CMC,
- to assist a user with computer-mediated or other relationships through analysis of his or her own portrayed psychological state and that of others being communicated with,
- to detect the tone and changes in tone of media coverage, or
- to assist in personnel selection by examining the relative characteristics of applicants.

- The invention receives inputs from computer-mediated communications, specifically email and chat, automatically, without the need to cut and paste. It is designed to work directly with these software packages such as Lotus Notes, Microsoft Outlook Express and AOL's email software. The LIWC is designed to receive multiple communications formats but written content must be transcribed and digital content must be cut and pasted into the system. It is not designed to work directly with, or accept directly, email or other computer-mediated communications.

- The invention is designed within its database and statistical module to automatically measure psychological state as it relates to at-risk conditions of an author (see psychological profiling module). The LIWC measures the number of words in each of its five dictionary module dimensions but does not automatically generate measures of psychological state. Nor is the LIWC designed specifically for sensitivity to psychological states as they relate to risk conditions.

- In addition to its psychological profiling module containing its dictionary, the invention contains a Personal and Organizational Keyword Algorithm Module. This specialized dictionary does not just examine the psychological state of the author, but rather looks at key words relevant to personal or organizational author activities that may constitute a threat. For example, the key word

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algorithms contain categories for threatening alert phrases such as "quit," "bomb," "hack," "crash," "leak," and other words and phrases that not only indicate an increased risk but suggest possible author actions. The LIWC does not contain this module or capability and was not designed to perform this function.

- The invention also contains Message Characteristics Algorithm Module for analysis of information contained in most computer-mediated communications such as date, time, sent to, sent from, length of message in words, etc. This module supplies important information regarding message characteristics that can further define an author's psychological state but may also identify possible targets of an author's future actions. The LIWC does not possess this module or capability.

- The LIWC report function produces word counts by dictionary categories (e.g. number of words in the article, insight, past tense or curse categories) as its final product. The table below is taken directly from the LIWC manual (Pennebaker and Francis, 1999) and gives an example of LIWC output.

Table A. Sample Output from the LIWC (Pennebaker and Francis, 1999, p. 12)

Filename	WC	WPS	Qmarks	Unique	Dic	Sixltr	Pronoun	I	We	Self
Lincoln.txt	3639	28.43	16.41	28.14	68.95	23.36	6.49	1.59	0.63	2.23
FDR.txt	1881	22.13	0	37.85	70.12	23.34	8.29	1.65	3.35	5
Clinton.txt	1584	17.22	0	37.82	71.34	20.71	11.17	0.88	7.83	8.71
Sexton.txt	237	14.81	18.75	43.88	85.23	12.24	19.83	13.5	0	13.5
Plath.txt	100	33.33	0	79	58	26	5	0	0	0
Abstr1.txt	107	17.83	0	60.75	63.55	45.79	0	0	0	0
Abstr2.txt	196	24.5	0	51.02	50.51	36.73	0	0	0	0
radio.txt	272	5.44	18	51.47	82.72	7.72	16.91	6.99	1.1	8.09
talkshow.txt	621	24.84	0	38.97	73.91	18.2	9.18	0.64	2.42	3.06
Huckraw.txt	654	21.8	10	46.94	66.97	8.1	13.91	2.75	1.07	3.82
Huckcln.txt	603	21.54	10.71	44.61	75.12	8.79	14.93	2.49	1.16	3.65

This LIWC output describes data for 11 samples from different subjects in terms of word count [WC], words per sentence [WPS], and percentage of sentences ending in question marks [Qmarks]). Other values are given in percentages. For example, the percentage of unique, long (sixltr), pronouns, "I," "We," and self references (self).

- The invention supplies such word counts in multiple formats but in addition the report generator produces the following information not produced by the LIWC—

  o Summary data on emotional states such as depressed, angry, victimized, anxious;

  o Summary data on changes in emotional states;

  o Report of a change in a psychological state to which responsive action should be taken;

  o Suggested actions to be taken in response to specific changes in psychological state.

These report generator functions and others noted below are shown in Figure 1 after the Report Generator Module.

As noted above, these report functions are displayed in summary form in Figure 1.

A bibliography of the publications referred to above is attached hereto as Exhibit 1.

Exhibit 2 is an analysis by the inventor of the Pennebaker prior art as understood by him relative to the dependent claims.

From a workflow model, Pennebaker's work is a cut and paste input which is applied to a parser which identifies and tabulates keywords and phrases. Dictionary modules are used by the parser which examine linguistic dimensions, psychological processes, time/space relativity, personal concerns and experimental dimensions. The output of the parser is applied to a database and statistical module which generates a report on word count. The present invention, on the other hand, utilizes an input which is electronically driven and provides an output which, beyond word counting, provides a summary of emotional states, such as depressed, angry, victimized, anxious; a summary of changes in emotional states, a report of a change in a psychological state to which responsive action should be taken and suggested actions to be taken in response to specific changes in psychological state.

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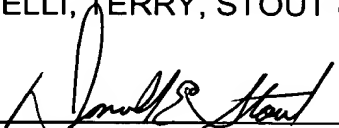Accordingly, claims 1 and 62 differ regarding the nature of the input and the nature of the output.

A brochure entitled "Linguistic Inquiry and Word Count" authored by Pennebaker et al dated sometime in 2003 which describes programs of Pennebaker some time in 2001 is submitted herewith. The inventor does not know the precise date of publication of the attached "Linguistic Inquiry and Word Count" and furthermore, does not know the precise date of the work described in the brochure which is dated 2001. Therefore, it is not known whether the publication is prior art or not. It is being cited pursuant to 37 C.F.R. §1.56 in order to bring it to the attention of the Examiner.

If the Examiner has specific questions based upon the brochure, it is requested that he identify them on the record so that an attempt may be made to answer any questions which the Examiner has.

To the extent necessary, Applicants petition for an extension of time under 37 C.F.R. §1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (1063.39266X00) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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Claims of U.S.S.N. 10/393,950	Claims of U.S.S.N. 09/767,838	Penneb Overlap Yes/no	Claims of U.S.S.N. 10/393,950	Caims of U.S.S.N. 09/767,838	Penneb Overlap Yes/No
1	1	No	36	8	no
2	2	No	37	19	no
3	5	No	38	39	no
4	15	No	39	40	no
5	16	No	40	41	no
6	23	No	41	45	no
7	26	No	42	46	yes
8	29	No	43	47	no
9	9	No	44	48	no
10	10	No	45	49	no
11	20	No	46	50	no
12	43	No	47	53	no
13	3	no	48	54	no
14	6	No	49	51	no
15	17	No	50	52	no
16	18	no	51	33	Yes
17	24	No	52	34	Yes
18	27	No	53	35	yes
19	30	No	54	36	no
20	11	No	55	37	no
21	12	no	56	38	no
22	21	no	57	42	no
23	31	no	58	55	no
24	32	no	59	56	no
25	44	no	60	57	no
26	58	no	61	61	no
27	59	no	62	62	no
28	60	no	63	63	no
29	4	no	64	64	no
30	13	no	65	65	no
31	14	no	66	66	no
32	22	no	67	67	no
33	25	no	68	68	no
34	28	no	69	69	no
35	7	no	70	70	no

Claim 42—the LIWC counts some of the same words, specifically I, me, negatives, direct references, feelings
Claims 51-53—these types of materials (emails, web content, bulletin board content) could also be cut and pasted into the LIWC

Substitute for form 1449B/PTO **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** *(use as many sheets as necessary)*	*Complete if Known*	
	Application Number	09/767,838
	Filing Date	January 24, 2001
	First Named Inventor	Eric D. SHAW
	Group Art Unit	2644
	Examiner Name	To Be Assigned

Sheet	1	of	1	Attorney Docket Number	1063.39266X00

OTHER PRIOR ART—NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		Pennebaker et al, James; Manual entitled "Linguistic Inquiry and Word Count" LIWC2001, 2003, The University of Texas at Austin and the University of Auckland, New Zealand, Erlbaum Publishers, Mahwah, NJ	
		RECEIVED	
		APR 0 2 2004	
		Technology Center 2600	

Examiner Signature		Date Considered	